

which is indifferent to any three continual proportionals, as was shewed before. So that now we have had three Demonstrations of this Quadrature, (in his *Rosetum*, in his *first* paper, and in his *third*,) and this common fault in all of them, that they equally prove the proportion by him proposed, or any other what you please. But such his Demonstrations use to be.

And this is what I thought fit to say to Mr. *Hobs's* ^{three} ~~Four~~ Papers (rather to satisfy the importunity of others, than because I thought them worth Answering :) And submit the whole, with all Respects, to the *Royal Society*, to whom Mr. *Hobs* makes his Appeal.

His Fourth Paper;

WHICH came out since the *Three* former were answer'd, (containing some faint endeavors to re-assert some things in them,) is but meer Trifling, or worse than so.

What he would therein insinuate concerning God (that we may as well prove *Him* to have had a Beginning, as that the World had) smells too rank of Mr. *Hobs*. We are not to measure Gods *Permanent* Duration of Eternity, by our *successive* Duration of Time: Nor, his Intire Ubiquity, by Corporeal Extension.

What in it concerns *Mathematicks*, (whether his own or others,) is so weak and trivial, (and said only, that he may seem to say something, though nothing to the purpose,) that I shall trust it with those to whom he makes his appeal, without thinking it to need any Reply; The view of what he writeth against, being a sufficient Answer to all he saith.

New Observations of Spots in the Sun; made at the Royal Academy of Paris, the 11, 12 and 13th of August 1671; and English't out of the French, as follows.

IT is now about twenty * years since, that Astronomers have not seen any considerable *spots* in the Sun, though before that time, since the Invention of Telescopes, they have from time to time observed them. The Sun appeared all that while with an entire brightness, and Signor *Cassini* saw him so the ninth of this month of *August*.

* See Numb. 74. p. 2216; whence it will appear, that some such Spots were seen here in London, A. 1660. And Mon^r. *Picard* affirm'd to Dr. *Fogelius* at Hamburg, that he had seen one in October 1651. witness the said Doctor's own Letter, written to the Publisher August 17th last.

But the *Eleventh* of the same, about six a clock at night, being furnisht only with a three-foot glass, he remarked in the Sun's disque *Two Spots* very dark, distant from his apparent Center about the third part of his Semi-diameter. And that he might the more exactly note their scituation, in respect of the several parts of the world, he made use of two very fine threds, cutting one another at right angles in the common *focus* of the two glasses and in the *Axis* of the Telescope: And having directed it toward the Sun, he so turn'd it, that letting it afterwards rest, one might see the Center of the Sun, according to one of these threds, advance Westward, this same thred marking in the Sun a Circle parallel to the *Equator*; and the other thred marked the *Circle of Declination*; or the *Horary Circle* of the said Sun. See *Tab. II. Fig. I.*

Then he observ'd, that the Spots were in the Southern part of the Sun; that their elongation from this parallel, passing through his Center, could be no more than about the *Sixtieth* part of his Diameter; and that they were scituate on the Eastern side in respect of the said Center of the Sun. He also measur'd several times, from six a clock at night to seven, the time, which lapsed between the passage of the Sun's center, and that of the first of these Spots through the said *horary Circle*, which sometimes he found to be twenty three, sometimes twenty two *seconds*, the semi-diameter of the Sun then passing in sixty six seconds.

The first of these Spots, being look'd upon with a Telescope of seventeen foot long, appear'd of a somewhat Oval figure; the other was oblong and a little curv'd, like the Hebrew letter *Jod*; and both together were surrounded by a *corolla* or coronet made up of little dark points, which conformed it self to the figure of the Spots, considered as they were joyned together: which coronet was more exactly observed the days following.

The *twelfth* of *August* he observ'd them from the time of Sun-rising, and perceived that now they were nearer his Center. The time between the passage of the Sun's center, and that of the interior edge of the Coronet which encompass'd them both, was then of sixteen seconds. At seven a clock it was but of fifteen, and the Southern limb of the Coronet touched the parallel passing through the Sun's center.

He continued exactly to observe them with a great Telescope, from six a clock in the morning to seven, and found them to be there, as they are represented in the II *Figure of Tab. 2.* The first was composed of two others almost round, and conjoyned. The second represented the shape of a Scorpion. The third was round. And they were all three environ'd with a Coronet, which was compos'd, as we said above, of abundance of little obscure pricks. This Coronet appear'd to be clearer than the rest of the Sun when look'd upon with the short Glass, and darker when seen with the long. Without it there were other points, but very black ones; viz. five near the round Spot on the South-side, and another near the Scorpion's tail on the North-side.

At Eight a clock and forty eight minuts, the figure of the Scorpion was seen divided into several pieces, as if his tail and arms had been cut off; represented in the III *Figure of Tab. 2.* The Northern point appear'd no more, there remaining none but those on the South side; and the length of the enclosure of all the Spots, comprehended between the extremities, was of one minut and fifteen seconds, and the breadth of thirty seconds.

The same *twelfth* day, at six in the evening, he found no great change in the first Spot. The other two were sever'd into five distinct ones, compass'd about with a Coronet, as appears in the IV *Figure of Tab. 2.* Together with five black points, which stood in a streight row, and after another manner than they did in the morning. From six at night unto seven, the time between the passage of the Sun's center, and that of the Coronets limb, was found to be, one time, of *eight* seconds, and another time of *seven seconds and an half.* The distance of the Spots unto the parallel, passing through the Sun's center, was near the same on the North side with what it had been observed to be in the morning on the South-side.

The *thirteenth* of *August*, between the Rising of the Sun and half an hour past six in the morning, the Spots stood as is seen in the V *Figure of Tab. 2*; the edge of the Coronet, being turn'd to a point on the South-side, was distant from the *Equator*, on the North-side half a minut; and there was but a second of time from the passage of the Sun's Center into the passage of the same anterior edge of the Coronet.

At

At eight a clock thirty minuts, the fore-edge was in the same *horary Circle* with the Center of the Sun: So that in one day and an half these Spots have run through very near the *third* part of the Sun's apparent semi-diameter, which giveth an Arc of nineteen degrees and an half of the Circumference of the Sun's Body; and consequently their Diurnal motion about the Sun's *Axe* hath been of *thirteen* degrees; and the time of their Periodical revolution, as far as we could conjecture in so little time, must be about *twenty seven days and an half*: Which yet will be more exactly determined by Observations of a longer time. Mean while those that have been made, give us hopes to see them yet six or seven days longer, if they disappear not before they arrive to the Sun's limb.

We thought it not amiss to advertise those, that are addicted to Celestial Observations, of the Discovery of these *Phænomena*, that they may also observe the same; and if they be not furnish'd with great Telescopes, they ought not therefore to be diverted from it, since we have found, that by a glass of one foot these Spots may be seen, at least as making but one spot. But it will be particularly necessary, to observe with care from about the fourth unto the eighteenth of the month of *September* next, (st.n.) whether these Spots, after they have passed over the Upper Hemisphere of the Sun which is hid from us, will not return and be seen again in its apparent disque.

So far the *French Academists*. To which we now add;
 1. That since their Observations were made publick, we had notice sent us from the above-mention'd Dr. *Fogelius* residing at *Hamburg*, (as we touch'd in the foregoing Tract,) that Mr. *Picard* had observ'd at Sea a Spot in the Sun from the third of *August* (st.n.) to the nineteenth of the same inclusively; and seen it, at the first, like the Tail of a Scorpion; but, on the nineteenth day resembling a Melon-seed. 2. That several curious Observers at *London* have seen one of those Spots recurr'd to the Sun's Eastern limb, on the same day that Signor *Cassini* predicted in the Relation above deliver'd they should return, if they continued: The particulars of whose Observations, if they come to hand, we may give an account of hereafter.

Macule in Sole die 12. et 13 Augusti 1671.

Mer.

fig. I.

Co.

Parallellus Equatori.

13. m.

12. v.

12. m.

12. v.

Co.

Sep.

II



III



IV



V

